Preliminary DRAFT North Lake Washington Chinook Population - Tier 2 - Initial Habitat Project List
Includes Potential Restoration and Protection Projects by Reach.
Kelsey Creek Subarea Reaches 1-10

Basinwide Recommendations:

Project #	Description
N605	Protect Existing Hydrology.
N606	Continue Bellevue's Native Growth Protection Area Program to acquire lands and actively manage areas to maintain ecosystem functions.

Reach 1: Lower Kelsey - Kelsey Creek from mouth to confluence with Richards Creek and Lake Hills culvert (76_01 - 76_03)
Restoration

Technical Hypothesis:

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N441	1	6	new	**Mercer Slough Floodplain Restoration:** Place LWD along edges and create off-channel habitat (where soils permit).		New concept, no plans/designs/conceptual drawings.	**M**	**H**
N442	1	6	new	**Riparian Restoration in Mercer Slough:** Remove invasive non-native plants and plant successional forests - such as cottonwood, dogwood and willow in wetter areas, and possibly cedar, spruce, etc. where soils and hydrology permit.		Implement in large disturburbed areas and work with Bellefields Office Park to create and increase buffers. Include large trees where not safety hazard to buildings or other structures.	**H**	**H**
N443	1	6	new	**Enhance Mercer Slough Cool Water Refuges:** Restore mouth of seeps and springs at Mercer Slough to provide cool refugia areas.		Two spring fed streams are known on East side of Mercer Slough, about mid-way to fish ladder.	**H**	**M**
N444	1	6	new	**Mercer Slough Blueberry Farm:** Implement improved Integrated Pest Management controls and cultural practices to reduce pesticide use and protect water quality in the Mercer Slough Blueberry Farm. Possibly consider organic certification as possible alternative in the future.		Farm currently uses very little chemicals and is analyzing the effects of increased organic cultural techniques on crop yields.	**M**	**H**
N445	1	6	new	**Mercer Slough Creosote Wall Removal:** Remove creosote wall near I-90.		We don't know why wall was built so don't know problems with removal.	**H**	**M/L**
N446	1	6	1d	**Fish Passage:** Replace Washington State Department of Transportation culverts beneath I-405 with bridge and restore stream habitat.			**H**	**M**
N447	1	6	new	**Above I-405, Reach 76-03:** Check sewage pump station/force mains for concerns about sewage smells that have been periodically noted.			**M**	**H**

N448	1	6	new	**Above I-405, Reach 76-03:** Remove riprap in stream channel bottom, install LWD, and restore habitat.		Need to consider Wilburton Trestle stability in restoration actions. Should be done in concert with I-405 bridge.	**H**	**M**
N449	1	6	1h	**Fish Passage:** Modify existing culverts that are partial barriers by placing low-flow deflectors on multichannel box culverts to increase depth of low-flow channel at 121st Avenue SE.			**H**	**H**
N450	1	6	new	**Above I-405, Reach 76-03:** Investigate opportunities to connect wetlands on north side of SE 8th near firestation with Kelsey creek for off-channel habitat.			**M**	**M**
N451	1	6	new	**Above I-405, Reach 76-03:** Improve connections with cold water seeps/springs off Woodridge Hill for refugia in Kelsey Creek.			**H**	**M**
N452	1	6	new	**Above I-405, Reach 76-03:** Install LWD; remove invasive non-native plants, restore native vegetation using successional forest concepts.			**H**	**H**

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
	1			new	No projects identified at this time.				

Reach 2: Kelsey Park - Kelsey Creek from Lake Hills connector culvert to lower end of Glendale Golf Course (76_04 - 76_05)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
N453	2	3	new	**Fish Passage:** Replace culverts at Lake Hills Connector with bridge.			**M**	**L**
N454	2	3	3a	**Installation of Large Woody Debris:** Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 76-03a through 76-08 of Kelsey Creek.			**H**	**H**

N455	2	3	4	**Wetland Restoration:** Restore and enhance degraded wetlands to restore off-channel and riparian wetland habitats along stream segment 76-05 of Kelsey Creek, which experienced the impact of a landslide as a result of the Nisqually earthquake.		Riparian corridor completed. Some beaver damage.	**M**	**M**
N456	2	3	6b	**Stream Channel Improvements:** Restore stream channel through Kelsey Creek segments 76-03 through 76-05.		Segment 76-04 complete. Funding from KCD and Waterworks.	**M**	**H**
N457	2	3	8a	**Restoration of Riparian Areas:** Identify and implement opportunities to plant native vegetation to increase cover, including coniferous trees where soils and hydrology permits, in the riparian zones throughout the subarea. First priority should be the mainstem of Kelsey Creek.			**H**	**H**
N458	2	3	3a	**Installation of Large Woody Debris:** Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 76-03a through 76-08 of Kelsey Creek.			**H**	**M**
N459	2	3	8b	**Restoration of Riparian Areas:** Remove invasive non-native plants and restore native vegetation. Use successional plantings in areas of high disturbance and limited canopy. Underplant conifers in areas of deciduous buffers.			**H**	**H**
N460	2	3	new	**Stream Channel Improvements:** Explore opportunities to set back or remove berm on reach 76-05 and expand buffer and channel migration zone.		Moving the berm may conflict with the historical, cultural and recreational uses of the farm. Lack of alternative pasture areas for the livestock could increase resource degradation.	**H**	**M**
N461	2	3	new	**Stream Channel Improvements:** If berm on reach 76-05 cannot be moved, then explore opportunities to utilize man-made tributary through pastures as secondary channel. Improve buffers around tributary with native vegetation and fencing.		Tributary has been fenced and a limited vegetated buffer been restored.	**H/M**	**M**
N462	2	3	new	**Riparian Wetland Creation/Floodplain Reconnection:** In lower Glendale, establish wetland along mainstem Kelsey, allow floodplain connectivity.		Glendale Country Club is willing to alter their course to allow this.	**H**	**H**
N463	2	3	new	**Channel Migration:** Allow natural channel migration to occur in lower Glendale reaches and Kelsey Creek Farm.			**H**	**M**
N464	2	3	new	**Enlarge Riparian Buffer:** Where possible increase native riparian buffer along mainstem Kelsey through Glendale Country Club.		Glendale Country Club is willing to enlarge buffers as long as the greens/course does not have to be modified.	**H**	**M**

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N465	2			new	**Acquisition:** Acquire parcels just south of SE 7th along wetland buffer.		Parcels are mostly undeveloped and currently excellent wetland buffer for mainstem Kelsey and West Tributary.	**H**	**H**
N466	2			new	**Farm Management BMPs:** Update Farm Renovation and Master Plan and continue to implement Environmental Management Plan BMPs to protect stream from water quality and physical impacts and to enhance and improve fish and wildlife habitat.			**H**	**M**
N467	2			new	**Illegal Water Withdrawals:** Investigate and remove illegal water withdrawals.		DOE has been notified of specific water withdrawals in reach.	**H**	**M**
N468	2			new	**Water Rights:** Investigate opportunities to utilize alternative water sources for legal water withdrawals.		Glendale Country Club has water rights for Kelsey Creek for irrigation. They typically use a stormwater pond for irrigation and use the water right only to maintain their rights.	**H**	**M**

Reach 3: Kelsey Golf Course - Kelsey Creek from grade control passage obstruction at golf course to Olympic pipeline structure (76_06 - 76_07)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M, L	Feasib. H, M, L
N469	3	1	3a	**Installation of Large Woody Debris:** Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 76-03a through 76-08 of Kelsey Creek.			**H**	**M**
N470	3	1	8a	**Restoration of Riparian Areas:** Identify and implement opportunities to plant native coniferous trees in the riparian zones throughout the subarea. First priority should be the mainstem of Kelsey Creek.			**H**	**M**
N471	3	1	new	**Riparian Education/Incentives:** Work with streamside property owners south of NE 8th to establish native riparian buffers.			**M**	**M**

N472	3	1	new	**Fish Passage:** Replace NE 8th St. culvert with bridge.			**H**	**L**
N473	3	1	new	**Fish Passage:** Reduce jump height at concrete weirs using artificial riffle or other "softer" engineering.			**H**	**H**
N474	3	1	new	**Remove Bank Armoring:** Remove riprap, setback banks, and bioengineer banks.			**H**	**L**
N475	3	1	new	**Restore stream channel** and use wildlife pond for off-channel habitat upstream of NE 8th.			**H**	**L**

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
N476	3			new	**Golf Course BMPs:** Have Glendale Country Club maintain National Audubon Environmental Certification and employ BMPs to avoid water quality, temperature, or other impacts to Kelsey Creek.		Glendale currently maintains all levels of environmental certification from Audubon. Work with Glendale should continue and care taken to assure that sand and physical impacts are not an issue.	**M**	**H**

Reach 4: Kelsey Below Valley Creek - Kelsey Creek from Olympic pipeline structure to confluence with Valley Creek (76_07)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
N477	4	2	3a	**Installation of Large Woody Debris:** Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 76-03a through 76-08 of Kelsey Creek.			**H**	**M**
N478	4	2	8a	**Restoration of Riparian Areas:** Identify and implement opportunities to plant native coniferous trees in the riparian zones throughout the subarea. First priority should be the mainstem of Kelsey Creek.			**H**	**M**
N479	4	2	new	**Bank Restoration:** Use bioengineering and bank slope setbacks to remove severely eroding gabion walls and stabilize stream banks.		This area is completely in private ownership. Implementation is uncertain.	**H**	**L**
N480	4	2	new	**Fish Passage:** Improve fish passage at Olympic Pipeline weirs.			**H**	**M**

N481	4	2	new	**Bel-Red Channel Constraints:** Re-establish more natural channel through Bel-Red area, use weirs for grade control at sheet pile wall until stream can be restored.			**H**	**L**

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
N482	4			new	**Acquire/Easements:** Protect existing riparian habitat, especially in larger parcels where stream could meander and buffers could be wider.			**H**	**H**
N483	4			new	**Sensitive Development:** Investigate and adopt options for more natural stream channel during Bel-Red commercial redevelopment process.			**H**	**M**

Reach 5: Kelsey Above Valley Creek - Kelsey Creek from confluence with Valley Creek to Main street (76_08 - 76_09)

Restoration

Technical Hypothesis: *Reduce fine sediment inputs, add LWD, restore riparian conditions, reduce channel confinement.*

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
N484	5	8 (tied with Reach 7: Richards Creek)	new	**Channel Restoration:** Enlarge channel cross-section, reconnect floodplain, install large woody debris through apartment complex.			**H**	**L**
N485	5	8 (tied with Reach 7: Richards Creek)	3a	**Installation of Large Woody Debris:** Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 76-03a through 76-08 of Kelsey Creek.			**H**	**M**
N486	5	8 (tied with Reach 7: Richards Creek)	7a	**Protection of Forested Buffers:** Purchase riparian forested buffers or conservation easements in stream segments 76-08 and 76-09 of Kelsey Creek.			**H**	**M**
N487	5	8 (tied with Reach 7: Richards Creek)	8a	**Restoration of Riparian Areas:** Identify and implement opportunities to plant native coniferous trees in the riparian zones throughout the subarea. First priority should be the mainstem of Kelsey Creek.			**M**	**M**

N488	5	8 (tied with Reach 7: Richards Creek)	new	**Reduce bank armoring,** lay back banks, and use bioengineering to restore banks and riparian area.			**H**	**L**
N489	5	8 (tied with Reach 7: Richards Creek)	new	**Fish Passage:** Replace private culverts that limit passage and flow.			**H**	**M**
N490	5	8 (tied with Reach 7: Richards Creek)	new	**Fish Passage:** Replace culvert at 148th Ave NE with fish friendly culvert or bridge.			**H**	**H**

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
N491	5			new	**Acquisition/Easements:** Protect existing coniferous riparian habitat along Kelsey Creek upstream of Ilahee Apt to 148th Ave NE.			**H**	**M**
N492	5			new	**Acquisition:** Protect wetlands along 148th.			**H**	**H**

Reach 6: Kelsey Creek Headwaters - Kelsey Creek from Main Street to headwaters (76_10 - 76_12)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
N493	6	9	new	**Remove culvert and restore stream channel** upstream of Main St.			**M**	**L**
N494	6	9	new	**Replant riparian vegetation** through Lake Hills Greenbelt to reduce reed canary grass impacts and keep temperatures lower.			**H**	**H**

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
N495	6			new	**Maintain headwater wetlands** to protect summer base flows and aquatic ecosystem.			**H**	**H**

Reach 7: Richards Creek - Richards Creek from mouth to SE 32nd St.

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
N496	7	8 (tied with Reach 5: Kelsey)	1c	**Fish Passage:** Obtain permits and build new culvert at SE 26th Street on East Creek.			**M**	**H**
N497	7	8 (tied with Reach 5: Kelsey)	1e	**Fish Passage:** Design, obtain permits, and build new culvert at SE 30th Street on Richards Creek.		Design work began 2003.	**M**	**H**
N498	7	8 (tied with Reach 5: Kelsey)	1j	**Fish Passage:** Modify existing culverts that are partial barriers by placing low-flow deflectors on multichannel box culverts to increase depth of low-flow channel at Lake Hills Connector.		Design work began 2003.	**H**	**H**
N499	7	8 (tied with Reach 5: Kelsey)	3b	**Installation of Large Woody Debris:** Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 77-02 through 77-03 of Richards Creek.			**H**	**H**
N500	7	8 (tied with Reach 5: Kelsey)	3c	**Installation of Large Woody Debris:** Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segment 79-01 of Sunset Creek.			**H**	**L**
N501	7	8 (tied with Reach 5: Kelsey)	7c	**Protection of Forested Buffers:** Purchase riparian forested buffers or conservation easements in stream segments 77-01 through 77-03 of Richards Creek.			**?**	**?**
N502	7	8 (tied with Reach 5: Kelsey)	8b	**Restoration of Riparian Areas:** Reduce invasive non-native plants in high Chinook usage reaches (reed canarygrass and purple loosestrife in segments 77-01 through 77-02 in Richards Creek.			**H**	**H**

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
N503	7			new	**Acquisition:** Purchase two parcels to protect hillside springs/seeps and forest.		Parcels are isolated from stream by Lake Hills Connector and Richards Road, but impacts from development could still impact stream. Includes parcels #0424059002 and	**M**	**H**
N504	7			new	**Acquisition:** Acquire undeveloped properties or easements along reach 77-02 & 78-01.			**H**	**H**

Reach 8: Valley Creek - Valley Creek from mouth to Bellevue Municipal Golf Course

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
N505	8	7	new	**Daylight Creek** - Daylight Valley Creek through Bellevue Golf Course.			**H**	**H**
N506	8	7	1d	**Fish Passage:** Improve fish passage at Washington State Department of Transportation culverts beneath SR 520.			**H**	**M**
N507	8	7	3e	**Installation of Large Woody Debris:** Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 82-01 through 82-05 of Valley Creek.		Segment 82-01 complete 2003.	**H**	**L**
N508	8	7	3f	**Installation of Large Woody Debris:** Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segment 83-01 of Sears Creek.		In permitting 2003.	**H**	**H**

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
	8			new	No projects identified at this time.				

Reach 9: West Tributary - West Trib from mouth to Bellevue-Redmond Road (upper extent coho potential)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
N509	9	4	1f	**Fish Passage:** Design, obtain permits, and build new culvert at NE First Street on West Tributary.			**H**	**M**
N510	9	4	3d	**Installation of Large Woody Debris:** Until peak hydrology can be restored to more natural conditions, design and install large woody debris to provide hydraulic refuge areas during peak flows in stream segments 80-01 through 80-02 in the West Tributary.			**H**	**H**
N511	9	4	6a	**Stream Channel Improvements:** Restore original stream channel of the West Tributary through Kelsey Creek Farm, segment 80-01.		Kelsey Creek Project , P-AD-65. Consultant hired 2003. Project in design.	**H**	**H**
N512	9	4	8b	**Restoration of Riparian Areas:** Reduce invasive non-native plants in high Chinook usage reaches (reed canarygrass and purple loosestrife in segments 80-01 through 80-02 in the West Tributary).			**H**	**H**
N513	9	4	new	**Stream Channel Improvements:** Place LWD in floodplain near channel and spanning logs, to help maintain channels, increase pool formation, and increase upland habitat diversity.		Do not recommend placing LWD in stream due to instability of channel and sediment deposition.	**H**	**H**

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
N514	9			new	**Acquisition:** Purchase parcels just south of SE 7th along wetland buffer.		Parcels are mostly undeveloped and currently excellent wetland buffer for mainstem Kelsey and West Tributary.	**H**	**H**

Reach 10: Goff Creek - Goff Creek from mouth (West Trib) to Bellevue-Redmond Road (upper extent coho potential)

Restoration

Technical Hypothesis:

Project #	Reach #	Reach Rest. Benefit Rank	NTAA #	Project Name & description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
	10	5		No projects identified at this time.				

Protection

Technical Hypothesis:

Project #	Reach #	Reach Prot. Benefit Rank	Existing Prot. Priority (Y/N)	NTAA #	NTAA Name & Description	Approx. Cost	Notes, Key Uncertainties	Benefits to Chinook H, M. L	Feasib. H, M, L
N515	10			7b	**Protection of Forested Buffers:** Purchase riparian forested buffers or conservation easements in stream segment 81-01 of Goff Creek.			**H**	**M**